Steering the right course for software engineering education

by Walter Bilanski, PhD, P.Eng., President

Currently, non-engineering faculties (science or computer science) at several Canadian universities either have or are seeking approval from their senates for software engineering programs. These include undergraduate degree programs in software engineering, as well as options and specialization streams. Corporations, such as Microsoft, also offer software engineering courses through private institutions.

Is the proliferation of software engineering programs offered by non-engineering faculties and others a problem? If it misleads students and employers into thinking that the graduates of such programs are potentially eligible for registration as professional engineers, it certainly is a problem for us. Further, if these graduates call themselves software engineers in the marketplace, they may mislead the public into believing that they are entitled to practise professional engineering, when they are not. Since PEO is mandated to protect the public, it had better take this issue seriously–and we have.

I have written to the chair of the Council of Ontario Universities (COU), which comprises the presidents of Ontario's 17 universities, requesting a meeting at which we could present PEO's position on this matter (see p. 5). Unfortunately, they have refused to meet with PEO representatives on the grounds that there is a legal suit pending between Memorial University and the combined forces of the Association of Professional Engineers and Geoscientists of Newfoundland (APEGN) and the Canadian Council of Professional Engineers (CCPE). Specifically, CCPE and APEGN are seeking a legal injunction to prevent Memorial's computer science department from calling an under-graduate specialty program "software engineering," on the grounds that it infringes on the profession's right to title, and may mislead graduates and the public.

The gist of the lawsuit is ownership of the term "engineer" and its variations. CCPE owns the trademark to engineering-related terms and the "professional engineer" title on behalf of its provincial constituents. This enables provincial engineering associations and CCPE to take legal action where necessary to prevent misuse of the engineering title–which CCPE and APEGN have done. The university is arguing that its computer science department has the right to use engineering-related terms in its programs.

So far, the lawsuit has cost each side over $280,000, attempts at mediation have not been successful, and the only winners have been the lawyers. The case will not come to trial before September 1999 at the earliest.

Having been an academic all of my life, I strongly support academic rights; however, can academic rights be allowed to supersede provincial legislation aimed at protecting the public? Similarly to other engineering licensing bodies, PEO was created by the provincial government to protect the public by enforcing the Professional Engineers Act. Let me emphasize that the Act was written to protect the public, not professional engineers. Hence, it is PEO's duty to ensure that the public is not misled to believe that anyone who graduates from a program purporting to be "engineering" is qualified to practise engineering.

The best way to ensure this is to regulate the terms "engineer" and "engineering" in academic usage. We have strong support from the deans of Ontario engineering schools in accomplishing this goal (13 of Ontario's 17 universities offer engineering programs). The type of cooperative partnership that exists between PEO and the deans of Ontario engineering schools is clearly a better way to prevent misuse of the engineering title than a long and costly legal case.

Another issue that concerns me (as both an engineer and a taxpayer) about the lawsuit involving Memorial, CCPE and APEGN is how it is being funded. Appropriately, engineers' money is being used to support the challenge by CCPE, as CCPE is funded by provincial and territorial professional engineering associations in proportion to their memberships. However, it is my understanding that a portion of Memorial University's legal expenses are being paid by the Association of Universities and Colleges of Canada. Since universities' and colleges' primary source of funding is taxes, this is *our* money–yours and mine. I certainly question the propriety of this use of public funding.

It also disturbs and disappoints me that the COU has declined to meet with PEO for an informal discussion on how best to reach an amicable solution to the "software engineering" problem at some Ontario universities. If PEO and Ontario universities cannot negotiate a solution, the provincial government to which we are all answerable may deign to settle the matter for all concerned. However, despite the COU's decision, I am optimistic that at least half of the Ontario university presidents will agree to meet with PEO, leading to a positive resolution we can all live with.

This is my point of view; I am sure that Ontario university presidents have their own. If any of them would care to express their point of view to Ontario engineers in writing, we would be more than willing to publish it as a letter to the editor in our membership publications (*Engineering Dimensions* or *The Link*). ◆

Professional Engineers
Ontario

November 16, 1998

Ian D. Clark
President, Council of Ontario Universities
180 Dundas Street West, 11th Floor
Toronto, ON M5G 1Z8

Dear Mr. Clark:

Thank you very much for the opportunity to meet with you on November 11, 1998.

As you suggested, I am writing to formalize our request to make a brief presentation to the Council of Ontario Universities and open a dialogue on the issue of software engineering. This letter provides information on Professional Engineers Ontario (PEO) and its mandate, and outlines the issues that we are facing with respect to the offering of software engineering programs, options and courses at the university level.

PEO Mandate and Statutory Authority
The engineering profession in regulated throughout Canada in the same manner as other professions. Each province and territory has established a self-regulatory body through an act of the legislature with statutory authority to license professional engineers and regulate the practice of engineering. Funding is provided solely from members' dues.

In Ontario, the Attorney General of Ontario is responsible for the Professional Engineers Act, under which statutory authorities are delegated to PEO. If you would like more details on the regulatory framework for the professions, you may wish to contact the Attorney General's office directly.

PEO governs the practice of engineering by its 62,000 members in Ontario to protect the public interest. We accomplish this in several ways:
◆ by setting standards for admissions and practice;
◆ by enforcing these standards through disciplinary action against our members; and
◆ by taking enforcement action against non-licensed individuals who practise engineering or lead the public to believe that they are permitted to practise engineering by the use of inappropriate titles.

One of the benchmarks for admission to the profession in Canada is graduation from a program accredited by the Canadian Engineering Accreditation Board (CEAB), which fulfills the academic portion of our licensing requirements. Graduates of other programs may be considered for admission, but are required to complete a series of technical examinations.

Software Engineering
Software engineering is a relatively new discipline in engineering in the formal sense. Although PEO has been licensing qualified software engineers for some time based on individual assessments, it is only recently that accredited academic programs in software engineering have been started. It is clear that software engineering is now a full-fledged engineering discipline.

With the increasing importance of software in society and many people seeking training and employment in this area, the use of the term "software engineer" has become more prevalent. PEO has traditionally taken enforcement actions against any use of the title "engineer" by those not licensed by PEO. We have done this because the public clearly perceives that a civil engineer, mechanical engineer, computer engineer, etc. is capable of providing services within the practice of professional engineering. There is no reason to expect that the same is not true for a software engineer.

This leads to the issues that we would like to discuss with the COU. Thirteen universities in Ontario offer accredited engineering programs, which meet the rigorous standards set by the CEAB. Ontario and Canada take pride in the fact that every graduate of an engineering program in Canada meets a high minimum standard that is respected worldwide.

Recently, some Ontario universities have begun offering "options" or "specialties" in engineering that are not seeking accreditation and that are likely not accreditable by CEAB. This has created a potential enforcement issue for PEO, as many of these graduates are presenting themselves as "engineers." Some have contacted PEO in the expectation that they have fulfilled the academic requirements for licensure. I would like to have a preliminary discussion with the COU to elaborate on these issues and better understand the issues faced by the universities as a whole.

Conclusion
PEO enjoys a good relationship with Ontario universities through our relationship with engineering faculties, students and the Council of Ontario Deans of Engineering. We would like to extend this relationship to COU to open a constructive dialogue on this issue and future issues that may arise.

I hope that an early meeting with your Council will be beneficial in helping us come to a mutual agreement of how to address the issues related to course titles in the best interests of both our organizations and the students enrolled in these courses.

I look forward to hearing from you soon.

Yours sincerely,

Walter Bilanski, PhD, P.Eng.
President

cc. Charles Harnick, Attorney General